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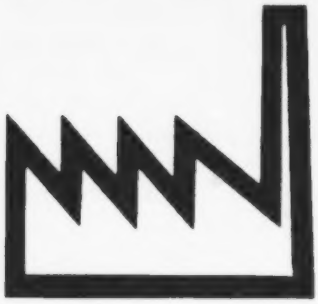

PRELIMINARY REPORT
INDUSTRY SERIES

1987 Census of Manufactures

MC87-I-33C(P)
Issued July 1989

SMELTING AND REFINING OF NONFERROUS METALS AND ALLOYS

Industries 3331, 3334, 3339, and 3341

INTRODUCTION

This report presents preliminary statistics from the 1987 Census of Manufactures for those establishments classified in the industries listed above. These data will be superseded by a more comprehensive final paperbound report. The method of data collection and use of administrative data are discussed in detail in the appendix.

All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The definitions of these industries are the same as those used in the 1987 Standard Industrial Classification (SIC) Manual.[1]

INDUSTRY 3331, PRIMARY COPPER

In the 1987 Census of Manufactures, Industry 3331, Primary Copper had employment of 3.3 thousand. The employment figure was 57 percent below the 7.6 thousand reported in 1982. Compared with 1986, employment in 1987 decreased 15 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was $2.6 billion.

The cost of materials and services used by establishments in this industry amounted to $2.2 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3334, PRIMARY ALUMINUM

In the 1987 Census of Manufactures, Industry 3334, Primary Aluminum, had employment of 17.4 thousand. The employment figure was 24 percent below the 22.9 thousand reported in 1982. Compared with 1986, employment in 1987 increased 3 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was $5.0 billion.

The cost of materials and services used by establishments in this industry amounted to $3.1 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3339, PRIMARY NONFERROUS METALS, N.E.C.

In the 1987 Census of Manufactures, Industry 3339, Primary Nonferrous Metals, N.E.C., had employment of 10.4 thousand.

The total value of shipments for establishments classified in this industry was $3.2 billion.

The cost of materials and services used by establishments in this industry amounted to $2.6 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3341, SECONDARY NONFERROUS METALS

In the 1987 Census of Manufactures, Industry 3341, Secondary Nonferrous Metals, had employment of 12.4 thousand. The employment figure was 35 percent below

[1] **Standard Industrial Classification Manual: 1987.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock No. 041-001-00314-2.

Address inquiries to Bureau of the Census, Industry Division, Washington, DC 20233, or call **Jessica M. Young** (301) 763-7304.

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the 19.2 thousand reported in 1982. Compared with 1986, employment in 1987 decreased 15 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was $4.4 billion.

The cost of materials and services used by establishments in this industry amounted to $3.4 billion in 1987. Data on specific materials consumed appear in table 3.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in the tables in this publication:

-	Represents zero.
(D)	Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
(NA)	Not available.
(NC)	Not comparable.
(S)	Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review.
(X)	Not applicable.
(Z)	Less than half the unit shown.
do	Ditto.
n.e.c.	Not elsewhere classified.
n.s.k.	Not specified by kind.
pt.	Part.
r	Revised.
SIC	Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

CONTACTS FOR DATA USERS

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Census/ASM		
Durables	Kenneth Hansen	(301) 763-7304
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Durables	Malcolm Bernhardt	(301) 763-2518
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Import/Export Publications	Foreign Trade Division	(301) 763-5140
Industry Analysis and Forecasts	International Trade Administration	(202) 377-4356

Table 1. Historical Statistics for the Industry: 1987 and Earlier Years

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix]

Year[1]	Companies[2] (no.)	All establishments[3] Total (no.)	All establishments[3] With 20 employees or more (no.)	All employees Number (1,000)	All employees Payroll (million dollars)	Production workers Number (1,000)	Production workers Hours (millions)	Production workers Wages (million dollars)	Value added by manufacture[4] (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories[4] (million dollars)	Ratios Specialization (percent)	Ratios Coverage (percent)
INDUSTRY 3331, PRIMARY COPPER															
1987 Census	(NA)	13	12	3.3	97.8	2.6	5.2	73.0	443.4	2 177.1	2 555.9	33.6	226.8	(NA)	(NA)
1986 ASM	(NA)	(NA)	(NA)	3.9	116.7	3.1	6.0	89.2	194.9	1 847.0	2 065.0	13.8	174.5	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	4.6	149.7	3.4	(S)	111.3	327.2	1 795.8	2 239.1	42.5	201.3	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	6.0	181.1	4.6	9.5	136.2	177.9	2 532.0	2 753.3	187.7	318.4	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	6.7	203.7	5.3	10.8	153.6	656.9	2 763.1	3 467.0	272.5	423.6	(NA)	(NA)
1982 Census	7	22	20	7.6	216.9	5.9	12.0	169.0	440.4	2 630.9	3 077.5	112.8	445.9	91	69
1981 ASM	(NA)	(NA)	(NA)	10.7	281.0	8.5	16.9	213.2	905.3	4 537.8	5 366.2	(NA)	694.9	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	10.3	231.3	8.1	15.0	166.0	818.8	4 442.5	5 514.8	61.2	687.1	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	11.9	248.0	9.8	19.4	193.9	1 310.8	4 587.6	5 646.3	90.8	965.1	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	13.0	236.4	10.6	21.1	184.5	775.4	3 363.6	4 229.3	124.9	667.8	(NA)	(NA)
1977 Census	8	27	27	13.1	217.3	10.6	20.6	167.5	904.3	3 062.5	3 918.1	225.8	756.6	86	83
1976 ASM	(NA)	(NA)	(NA)	14.3	221.8	11.3	22.6	169.8	746.0	2 759.7	3 549.7	(NA)	566.0	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	15.5	216.4	12.1	24.1	165.5	357.4	2 644.6	3 113.0	164.6	609.9	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	17.5	214.3	14.0	27.9	167.2	897.8	3 454.7	4 116.5	133.2	713.9	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	17.0	186.0	14.1	28.5	148.6	629.0	2 964.2	3 557.0	131.3	416.1	(NA)	(NA)
1972 Census	11	31	31	17.2	173.2	14.4	28.7	138.2	487.8	2 298.5	2 771.1	119.7	367.6	89	82
INDUSTRY 3334, PRIMARY ALUMINUM															
1987 Census	(NA)	50	29	17.4	569.9	13.9	27.7	421.5	1 903.2	3 056.9	5 016.3	173.5	520.9	(NA)	(NA)
1986 ASM	(NA)	(NA)	(NA)	16.9	570.4	13.1	23.9	405.6	1 003.9	3 014.5	4 241.8	71.1	557.3	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	19.7	664.8	15.3	30.0	492.4	877.1	3 423.2	4 488.4	122.8	840.7	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	22.5	767.2	17.8	35.9	581.7	1 722.5	4 516.4	6 011.2	154.4	1 188.9	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	21.4	712.9	16.5	32.0	529.0	1 566.8	4 158.7	6 089.9	390.7	993.1	(NA)	(NA)
1982 Census	15	34	29	22.9	733.1	16.9	32.3	525.1	1 133.9	3 916.0	5 037.1	181.2	1 389.3	97	73
1981 ASM	(NA)	(NA)	(NA)	30.3	893.6	23.3	46.1	666.3	2 347.9	4 634.5	6 573.6	458.6	1 391.5	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	32.8	874.7	25.7	50.3	685.3	2 774.4	4 259.7	6 979.9	216.6	830.7	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	31.5	764.6	25.2	50.8	593.2	2 258.1	3 463.0	5 747.8	216.2	661.8	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	29.7	644.6	23.8	48.8	498.3	1 963.5	3 129.7	5 122.9	169.5	649.4	(NA)	(NA)
1977 Census	12	32	32	28.6	555.0	22.8	45.5	426.3	1 980.9	2 694.5	4 647.8	158.7	646.8	95	70
1976 ASM	(NA)	(NA)	(NA)	26.3	461.6	20.8	41.4	350.9	1 465.9	2 314.1	3 852.9	188.6	582.7	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	25.3	399.7	19.3	38.2	295.0	1 219.5	1 860.2	2 889.1	227.3	633.0	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	27.7	386.8	22.4	44.0	297.7	1 330.4	1 688.7	2 957.8	185.5	374.2	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	27.9	350.7	22.5	45.0	271.0	1 022.3	1 310.6	2 344.8	137.3	242.9	(NA)	(NA)
1972 Census	12	31	31	25.6	296.2	20.0	39.2	219.8	816.0	1 080.6	1 959.8	136.5	233.7	94	76
INDUSTRY 3339, PRIMARY NONFERROUS METALS, N.E.C.[5]															
1987 Census	(NA)	104	47	10.4	311.1	7.2	14.5	193.7	624.9	2 552.1	3 203.9	151.1	406.7	(NA)	(NA)
1986 ASM	(NA)	(NA)	(NA)	11.2	323.9	7.9	15.1	206.8	546.5	1 913.5	2 569.5	113.8	420.2	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	13.2	380.5	9.3	17.9	248.8	426.4	2 485.2	3 060.0	277.2	559.9	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	12.2	351.5	8.8	16.8	232.8	674.9	2 516.7	3 179.5	111.7	631.7	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	12.7	338.9	8.5	15.9	212.6	889.2	2 542.2	3 465.7	69.8	607.0	(NA)	(NA)
1982 Census	(NA)	105	45	13.4	356.6	9.2	17.8	234.2	736.7	2 510.5	3 206.2	118.4	640.4	(NA)	(NA)
1981 ASM	(NA)	(NA)	(NA)	16.6	379.4	11.5	21.7	238.5	690.9	2 790.7	3 277.1	(NA)	697.0	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	16.3	356.2	12.0	23.4	240.5	862.1	2 868.8	3 912.4	110.3	653.9	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	17.8	349.4	13.0	25.8	234.5	1 171.1	2 345.4	3 302.8	138.3	765.4	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	16.5	302.6	12.0	24.3	205.9	724.5	1 533.5	2 315.2	173.0	509.1	(NA)	(NA)
1977 Census	(NA)	101	40	15.7	259.8	11.5	23.1	174.6	733.3	1 386.4	2 094.2	(NA)	548.6	(NA)	(NA)
1976 ASM	(NA)	(NA)	(NA)	18.6	279.7	13.7	28.2	189.5	767.6	1 834.7	2 567.9	189.9	717.4	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	17.0	227.5	12.7	25.5	157.4	834.5	1 368.0	1 993.1	207.1	656.5	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	17.9	214.0	13.5	28.0	147.1	737.0	1 584.7	2 308.8	267.5	415.9	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	15.9	168.1	12.2	23.6	118.4	491.9	1 088.3	1 536.8	46.6	346.6	(NA)	(NA)
1972 Census	(NA)	115	62	15.8	157.5	12.2	24.2	107.8	401.8	862.9	1 233.2	36.1	291.2	(NA)	(NA)
INDUSTRY 3341, SECONDARY NONFERROUS METALS															
1987 Census	(NA)	386	160	12.4	309.8	9.1	19.2	185.2	944.8	3 433.4	4 411.6	62.4	545.6	(NA)	(NA)
1986 ASM	(NA)	(NA)	(NA)	14.6	351.1	10.5	21.0	210.0	833.3	3 323.4	4 143.0	58.2	631.9	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	16.0	371.4	11.6	23.5	225.9	782.6	3 486.8	4 315.1	103.0	661.9	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	17.7	404.6	12.9	26.0	254.2	940.5	4 387.7	5 308.7	116.7	791.6	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	17.2	376.3	12.3	24.2	230.1	833.1	4 181.9	5 135.9	54.4	762.9	(NA)	(NA)
1982 Census	396	458	212	19.2	402.2	13.5	26.3	246.4	619.8	4 134.7	4 851.9	146.4	842.0	97	31
1981 ASM	(NA)	(NA)	(NA)	21.9	435.0	15.7	32.2	271.5	910.7	3 931.4	4 798.2	189.5	784.2	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	22.0	398.4	15.7	32.0	242.0	1 056.6	4 459.1	5 484.3	120.2	720.4	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	22.9	392.8	17.3	35.4	255.5	1 091.2	3 893.4	5 064.5	105.4	684.0	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	19.6	293.3	14.7	29.2	188.9	782.2	3 061.6	3 791.8	120.1	568.1	(NA)	(NA)
1977 Census	393	460	200	18.9	269.8	14.0	28.4	169.7	769.3	2 792.2	3 558.0	114.3	485.2	97	26
1976 ASM	(NA)	(NA)	(NA)	17.8	236.7	12.9	26.3	147.4	632.5	2 585.6	3 178.9	120.3	430.3	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	17.1	207.6	12.4	25.1	129.3	575.5	2 281.0	2 871.8	61.6	375.2	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	19.1	214.4	14.6	29.7	139.3	1 019.3	2 905.7	3 987.6	46.4	405.8	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	17.4	176.0	12.9	26.5	112.9	555.7	1 975.0	2 512.7	28.5	257.7	(NA)	(NA)
1972 Census	325	381	184	17.8	170.1	13.1	26.6	108.2	410.9	1 685.0	2 097.2	34.8	205.9	98	28

Note: Establishments of single unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. Data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were estimated based on administrative-record information from other agencies in conjunction with industry averages. These establishments accounted for the following percent of total value of shipments: SIC 3331, less than 1%; SIC 3334, 1%; SIC 3339, 6%; and 3341, 15%.

[1]In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1972, see 1972 Census of Manufactures, vol. II, table 1a of the Industry chapter.

[2]For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

[3]Includes establishments with payroll at any time during year.

[4]Beginning with the 1982 Census of Manufactures, all respondents were requested to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior Censuses and annual surveys of manufactures in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, inventories and value added by manufacture are not comparable to prior-year data.

[5]Industry is redefined for 1987. It is composed of 1982 Industries 3332, 3333, and 3339.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers:

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987							
				Product shipments[1]					
				Total, including interplant transfers		Commercial		Interplant transfers	
		Number of companies with shipments of $100,000 or more	Quantity of total production	Quantity[2]	Value (million dollars)	Quantity	Value (million dollars)	Quantity	Value (million dollars)
3331- —	**PRIMARY COPPER**								
	Total	**(NA)**	**(X)**	**(X)**	**2 984.2**	**(X)**	**(X)**	**(X)**	**(X)**
33311 —	Copper smelter products:								
33311 00	Copper smelter products, not of commercial grade, produced for further refining, including blister or anode copper, matte, speiss, flue dust, residues, etc. — 1,000 s tons	9	1 076.9	871.7	1 380.4	207.1	267.9	664.6	1 112.5
33312 —	Refined primary copper (see also code 33412)	(NA)	(X)	(X)	1 598.6	(X)	(X)	(X)	(X)
	Copper and copper-base alloys:								
33312 17	Cathode — 1,000 s tons	6	927.4	668.3	996.6	(D)	(D)	(D)	(D)
33312 20	Wire bar — do	4	(D)	(D)	(D)	(D)	(D)	-	-
33312 23	Ingot and ingot bar — do	2	(D)	(D)	(D)	(D)	(D)	-	-
33312 26	Other, including cakes, slabs, shot, etc. — do	3	(D)	(D)	(D)	(D)	(D)	-	-
33312 00	Refined primary copper, n.s.k.	(NA)	(X)	(X)	.1	(X)	(X)	(X)	(X)
33310 —	Primary copper, n.s.k.	(NA)	(X)	(X)	5.1	(X)	(X)	(X)	(X)
33310 00	Primary copper and copper-base alloys, n.sk., typically for establishments with 20 employees or more (see note)	(NA)	(X)	(X)	5.1	(X)	(X)	(X)	(X)
33310 02	Primary copper and copper-base alloys, n.s.k., typically for establishments with less than 20 employees (see note)	(NA)	(X)	(X)	-	(X)	(X)	(X)	(X)
3334- —	**PRIMARY ALUMINUM**								
	Total	**(NA)**	**(X)**	**(X)**	**4 504.9**	**(X)**	**(X)**	**(X)**	**(X)**
33347 —	Aluminum ingot, produced in primary aluminum reduction plants (see also codes 33417 and 33553):								
33347 00	Ingot, excluding billet — 1,000 s tons	15	3 192 5	2 902.3	3 450.4	1 341.0	1 529.8	1 561.3	1 920.6
33348 —	Aluminum extrusion billet, produced in primary aluminum reduction plants (see also codes 33418 and 33554):								
33348 00	Extrusion ingot (billet) — 1,000 s tons	8	800.2	733.1	1 026.3	(D)	(D)	(D)	(D)
33340 —	Primary aluminum, n.s.k.	(NA)	(X)	(X)	28.2	(X)	(X)	(X)	(X)
33340 00	Primary aluminum, n.s.k., typically for establishments with 20 employees or more (see note)	(NA)	(X)	(X)	28.2	(X)	(X)	(X)	(X)
33340 02	Primary aluminum, n.s.k., typically for establishments with less than 20 employees (see note)	(NA)	(X)	(X)	-	(X)	(X)	(X)	(X)
3339- —	**PRIMARY NONFERROUS METALS, N.E.C.[3]**								
	Total	**(NA)**	**(X)**	**(X)**	**2 408.9**	**(X)**	**(X)**	**(X)**	**(X)**
33391 —	Zinc residues and other zinc smelter products:								
33391 00	Residues and other zinc products, not of commercial grade, produced for further refining, including base bullion, matte, speiss, etc. — 1,000 s tons	8	(D)	(D)	(D)	(D)	(D)	-	-
33392 —	Refined primary zinc (see also code 33414)	(NA)	(X)	(X)	(D)	(X)	(X)	(X)	(X)
	Zinc (including all ASTM specification zinc), unalloyed								
	Slab, excluding remelt zinc:								
33392 31	Special high grade — 1,000 s tons	2	(D)	(D)	(D)	(D)	(D)	-	-
33392 37	Prime western — do	2	(D)	(D)	(D)	(D)	(D)	-	-
33392 39	Other grades — do	3	(S)	(S)	154.6	(X)	(X)	-	-
	Slab, remelt zinc:								
33392 41	Special high grade — 1,000 s tons	-	-	-	-	-	-	-	-
33392 43	Prime western — do	-	-	-	-	-	-	-	-
33392 49	Other grades — do	-	-	-	-	-	-	-	-
33392 55	Dust — do	3	(D)	(D)	(D)	(D)	(D)	-	-
33392 51	Zinc-base alloys — do	3	29.3	29.3	25.6	29.3	25.6	-	-
33392 00	Refined primary zinc, n.s.k.	(NA)	(X)	(X)	26.0	(X)	(X)	(X)	(X)
33395 —	Precious metals and precious metal alloys (primary smelting) (see also code 33415)	(NA)	(X)	(X)	651.6	(X)	(X)	(X)	(X)
33395 25	Gold — 1,000 troy ounces	8	3 220.6	468.8	204.6	(D)	(D)	(D)	(D)
33395 35	Silver — do	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33395 45	Platinum, including platinum-group metals — do	1	(D)	(D)	(D)	(D)	(D)	-	-
33395 00	Precious metals and precious metal alloys (primary smelting), n.s.k.	-	(X)	(X)	-	(X)	(X)	(X)	(X)
33398 —	Other primary nonferrous metals, n.e.c.	(NA)	(X)	(X)	1 281.7	(X)	(X)	(X)	(X)
33398 01	Lead smelter products, not of commercial grade, produced for further refining, including base bullion, matte, speiss, etc. — 1,000 s tons	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33398 05	Refined primary lead (see also code 33413) — do	3	(D)	(D)	(D)	(D)	(D)	-	-
33398 33	Magnesium and magnesium-base alloys (see also code 33416) — do	3	107.5	111.2	310.6	(D)	(D)	(D)	(D)
33398 43	Nickel and nickel-base alloys (see also code 33416) — do	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33398 63	Tin, unalloyed (see also code 33416) — do	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.

1987 and 1982

of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of

1987—Con.		1982									
				Product shipments[1]							
				Total, including interplant transfers		Commercial		Interplant transfers			
Quantity of shipments of products made from materials owned by others	Quantity produced and consumed in the same plant in the manufacture of other products	Number of companies with shipments of $100,000 or more	Quantity of total production	Quantity[2]	Value (million dollars)	Quantity	Value (million dollars)	Quantity	Value (million dollars)	Quantity of shipments of products made from materials owned by others	Quantity produced and consumed in the same plant in the manufacture of other products	1987 product code
												3331- —
(X)	**(X)**	**(NA)**	**(X)**	**(X)**	**2 978.3**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**	
												33311 —
												33311 00
(D)	(D)	8	1 963.6	1 581.4	1 454.8	523.9	440.0	1 057.6	1 014.8	432.2	(D)	
(X)	(X)	(NA)	(X)	(X)	1 522.4	(X)	(X)	(X)	(X)	(X)	(X)	33312 —
												33312 17
(D)	172.6	6	(NA)	626.6	840.0	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	(D)	5	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33312 20
-	-	4	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33312 23
-	(D)	6	(NA)	234.2	319.0	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33312 26
(X)	(X)	(NA)	(X)	(X)	(NA)	(X)	(X)	(X)	(X)	(X)	(X)	33312 00
(X)	(X)	(NA)	(X)	(X)	1.0	(X)	(X)	(X)	(X)	(X)	(X)	33310 —
												33310 00
(X)	(X)	(NA)	(X)	(X)	1.0	(X)	(X)	(X)	(X)	(X)	(X)	
												33310 02
(X)	(X)	(NA)	(X)	(X)	-	(X)	(X)	(X)	(X)	(X)	(X)	
												3334- —
(X)	**(X)**	**(NA)**	**(X)**	**(X)**	**4 500.6**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**	
												33347 —
												33347 00
23.8	302.9	15	(NA)	3 371.8	4 007.0	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
												33348 —
												33348 00
(D)	(D)	11	(NA)	421.5	492.1	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
(X)	(X)	(NA)	(X)	(X)	1.5	(X)	(X)	(X)	(X)	(X)	(X)	33340 —
(X)	(X)	(NA)	(X)	(X)	1.5	(X)	(X)	(X)	(X)	(X)	(X)	33340 00
												33340 02
(X)	(X)	(NA)	(X)	(X)	-	(X)	(X)	(X)	(X)	(X)	(X)	
												3339- —
(X)	**(X)**	**(NA)**	**(X)**	**(X)**	**2 655.7**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**	
												33391 —
												33391 00
-	-	11	81.9	88.2	30.2	(D)	(D)	(D)	(D)	-	-	
(X)	(X)	(NA)	(X)	(X)	250.0	(X)	(X)	(X)	(X)	(X)	(X)	33392 —
												33392 31
-	(D)	5	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	-	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33392 37
-	-	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33392 39
												33392 41
-	-	1	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	-	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33392 43
-	-	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33392 49
(D)	-	2	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33392 55
-	-	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33392 51
(X)	(X)	(NA)	(X)	(X)	(NA)	(X)	(X)	(X)	(X)	(X)	(X)	33392 00
												33395 —
(X)	(X)	(NA)	(X)	(X)	921.2	(X)	(X)	(X)	(X)	(X)	(X)	
												33395 25
-	(D)	8	(NA)	*788.5	293.2	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	(D)	10	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33395 35
-	(D)	3	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33395 45
												33395 00
(X)	(X)	(NA)	(NA)	(X)	1.3	(X)	(X)	(X)	(X)	(X)	(X)	
(X)	(X)	(NA)	(X)	(X)	(NA)	(X)	(X)	(X)	(X)	(X)	(X)	33398 —
												33398 01
-	-	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
(D)	(D)	4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	33398 05
												33398 33
-	-	4	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	-	7	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33398 43
-	(D)	3	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33398 63

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers:

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987							
				Product shipments[1]					
				Total, including interplant transfers		Commercial		Interplant transfers	
		Number of companies with shipments of $100,000 or more	Quantity of total production	Quantity[2]	Value (million dollars)	Quantity	Value (million dollars)	Quantity	Value (million dollars)
3339- —	**PRIMARY NONFERROUS METALS, N.E.C.[3]—Con.**								
33398 —	Other primary nonferrous metals, n.e.c.—Con.								
33398 73	Silicon, unalloyed (see also code 33416) ---- 1,000 s tons	9	(S)	(S)	263.5	(D)	(D)	(D)	(D)
33398 89	Other unrefined nonferrous metals, including metal bearing furnace residues and other metal products which have to be further refined before sale to consumers (see also code 33416) ---- do	4	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33398 99	Other refined nonferrous metals and their alloys, including chromium, cadmium, antimony, cobalt, molybdenum, titanium sponge, etc. (see also code 33416) ---- do	14	(S)	(S)	156.9	(D)	(D)	(D)	(D)
33398 00	Other primary nonferrous metals, n.e.c., n.s.k. ----	(NA)	(X)	(X)	10.2	(X)	(X)	(X)	(X)
33390 —	Primary nonferrous metals, n.e.c., n.s.k. ----	(NA)	(X)	(X)	130.5	(X)	(X)	(X)	(X)
33390 00	Primary nonferrous metals, n.e.c., n.s.k., typically for establishments with more than 20 employees (see note) ----	(NA)	(X)	(X)	85.5	(X)	(X)	(X)	(X)
33390 02	Primary nonferrous metals, n.e.c., n.s.k., typically for establishments with less than 20 employees (see note) ----	(NA)	(X)	(X)	45.0	(X)	(X)	(X)	(X)
3341- —	**SECONDARY NONFERROUS METALS**								
	Total ----	**(NA)**	**(X)**	**(X)**	**4 233.0**	**(X)**	**(X)**	**(X)**	**(X)**
33412 —	Secondary copper (pig, ingot, shot, etc.) (see also code 33312) ----	(NA)	(X)	(X)	544.2	(X)	(X)	(X)	(X)
	Copper, unalloyed:								
33412 17	Cathode ---- 1,000 s tons	2	(D)	(D)	(D)	(D)	(D)	-	-
33412 20	Wire bar ---- do	2	(D)	(D)	(D)	(D)	(D)	-	-
33412 23	Ingot and ingot bar ---- do	3	23.4	23.3	31.2	23.3	31.2	-	-
33412 26	Other, including cakes, slabs, shot, etc. ---- do	5	162.4	161.3	218.0	(D)	(D)	(D)	(D)
33412 31	Copper-base alloys ---- do	21	146.9	*141.5	193.9	(D)	(D)	(D)	(D)
33412 00	Secondary copper (pig, ingot, shot, etc.), n.s.k. ----	(NA)	(X)	(X)	33.3	(X)	(X)	(X)	(X)
33413 —	Secondary lead (pig, ingot, shot, etc.) (see also code 33398) ----	(NA)	(X)	(X)	(D)	(X)	(X)	(X)	(X)
33413 11	Lead, unalloyed (pig, ingot, shot, etc.) ---- 1,000 s tons	11	217.5	195.1	120.1	(D)	(D)	(D)	(D)
	Lead- and tin-base alloys:								
33413 21	Antimonial lead ---- 1,000 s tons	11	221.4	203.8	148.4	(D)	(D)	(D)	(D)
33413 33	Babbitt metal ---- do	6	28.6	28.6	18.3	28.6	18.3	-	-
33413 51	Solder ---- do	16	67.6	*65.5	147.6	(D)	(D)	(D)	(D)
33413 71	Type metal ---- do	1	(S)	(S)	.4	(S)	.4	-	-
33413 98	Other lead- and tin-base alloys ---- do	10	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33413 00	Secondary lead (pig, ingot, shot, etc.), n.s.k. ----	(NA)	(X)	(X)	21.7	(X)	(X)	(X)	(X)
33414 —	Secondary zinc (pig, ingot, shot, etc.) (see also code 33392) ----	(NA)	(X)	(X)	(D)	(X)	(X)	(X)	(X)
	Zinc (including all ASTM specification zinc), unalloyed:								
	Slab, excluding remelt zinc:								
33414 10	Special high grade ---- 1,000 s tons	3	(D)	(D)	(D)	(D)	(D)	-	-
33414 14	Prime western ---- do	-	-	-	-	-	-	-	-
33414 17	Other grades ---- do	-	-	-	-	-	-	-	-
	Slab, remelt zinc:								
33414 20	Special high grade ---- 1,000 s tons	2	(D)	(D)	(D)	(D)	(D)	-	-
33414 23	Prime western ---- do	2	(D)	(D)	(D)	(D)	(D)	-	-
33414 26	Other grades ---- do	3	(D)	(D)	(D)	(D)	(D)	-	-
33414 05	Dust ---- do	4	(D)	(D)	(D)	(D)	(D)	-	-
33414 11	Zinc-base alloys ---- do	14	(S)	(S)	139.1	(S)	139.1	-	-
33414 00	Secondary zinc (pig, ingot, shot, etc.), n.s.k. ----	(NA)	(X)	(X)	7.9	(X)	(X)	(X)	(X)
33415 —	Precious metals, produced at secondary refineries (pig, ingot, shot, etc.) (see also code 33395) ----	(NA)	(X)	(X)	745.3	(X)	(X)	(X)	(X)
	Precious metals, unalloyed:								
33415 11	Gold ---- 1,000 troy ounces	13	518.2	*482.4	228.0	*482.4	228.0	-	-
33415 31	Silver ---- do	14	5 207.1	5 050.5	39.0	5 450.1	39.0	-	-
33415 51	Platinum, including platinum-group metals ---- do	8	574.8	424.7	98.2	424.7	98.2	-	-
	Precious metal alloys:								
33415 71	Silver-base alloys ---- 1,000 troy ounces	5	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33415 81	Gold-base alloys ---- do	9	1 041.9	492.9	254.4	(D)	(D)	(D)	(D)
33415 89	Other precious metal alloys, including platinum-group alloys ---- do	8	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33415 00	Precious metals, produced at secondary refineries (pig, ingot, shot, etc.), n.s.k. ----	(NA)	(X)	(X)	14.7	(X)	(X)	(X)	(X)
33416 —	Other secondary nonferrous metals (see also code 33398) ----	(NA)	(X)	(X)	56.1	(X)	(X)	(X)	(X)
	Alloyed:								
33416 21	Magnesium-base alloys ---- 1,000 s tons	2	(D)	(D)	(D)	(D)	(D)	-	-
33416 31	Nickel-base alloys ---- do	4	(S)	(S)	2.1	(S)	2.1	-	-
33416 43	Other nonferrous metal alloys ---- do	2	(S)	(S)	25.4	(D)	(D)	(D)	(D)
	Unalloyed:								
33416 61	Magnesium ---- 1,000 s tons	-	-	-	-	-	-	-	-
33416 69	Nickel ---- do	-	-	-	-	-	-	-	-
33416 71	Tin ---- do	4	.6	*.6	4.0	(D)	(D)	(D)	(D)
33416 99	Other unalloyed nonferrous metals, including cadmium, antimony, cobalt, molybdenum, titanium sponge, etc. ---- do	2	(D)	(D)	(D)	(D)	(D)	-	-
33416 00	Other secondary nonferrous metals, n.s.k. ----	(NA)	(X)	(X)	8.4	(X)	(X)	(X)	(X)

See footnotes at end of table.

1987 and 1982—Con.

of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of

1987—Con.		1982										
				Product shipments[1]								
				Total, including interplant transfers		Commercial		Interplant transfers				
Quantity of shipments of products made from materials owned by others	Quantity produced and consumed in the same plant in the manufacture of other products	Number of companies with shipments of $100,000 or more	Quantity of total production	Quantity[2]	Value (million dollars)	Quantity	Value (million dollars)	Quantity	Value (million dollars)	Quantity of shipments of products made from materials owned by others	Quantity produced and consumed in the same plant in the manufacture of other products	1987 product code
												3339— —
												33398 —
												33398 73
(D)	-	6	28.7	32.7	*116.1	32.7	116.1	-	-	-	.1	
												33398 89
-	-	5	(NA)	23.9	50.5	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
												33398 99
(D)	(D)	14	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
(X)	(X)	-	(X)	(X)	-	(X)	(X)	(X)	(X)	(X)	(X)	33398 00
(X)	(X)	(NA)	(X)	(X)	31.7	(X)	(X)	(X)	(X)	(X)	(X)	33390 —
												33390 00
(X)	(X)	(NA)	(X)	(X)	3.7	(X)	(X)	(X)	(X)	(X)	(X)	
												33390 02
(X)	(X)	(NA)	(X)	(X)	28.0	(X)	(X)	(X)	(X)	(X)	(X)	
												3341— —
(X)	**(X)**	**(NA)**	**(X)**	**(X)**	**4 385.9**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**	
												33412 —
(X)	(X)	(NA)	(X)	(X)	866.5	(X)	(X)	(X)	(X)	(X)	(X)	
												33412 17
(D)	-	5	(NA)	66.6	76.6	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	-	1	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33412 20
-	(D)	9	(NA)	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	33412 23
-	(D)	9	(NA)	319.1	406.9	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33412 26
(D)	(D)	30	168.4	227.6	288.3	(D)	(D)	(D)	(D)	(D)	(D)	33412 31
(X)	(X)	(NA)	(X)	(X)	(NA)	(X)	(X)	(X)	(X)	(X)	(X)	33412 00
(X)	(X)	(NA)	(X)	(X)	591.1	(X)	(X)	(X)	(X)	(X)	(X)	33413 —
												33413 11
-	23.8	25	339.5	**328.8	211.0	606.7	363.8	5.8	3.2	17.0	(D)	
												33413 21
-	34.5	28	287.8	283.9	156.0					67.4	(D)	
-	(D)	11	3.8	*3.4	11.5	3.4	11.5	-	-	.5	-	33413 33
(D)	(D)	27	88.9	**86.9	165.6	(D)	(D)	(D)	(D)	.7	(D)	33413 51
-	-	7	3.6	3.6	4.8	3.6	4.8	-	-	-	(Z)	33413 71
-	(D)	15	38.2	38.2	39.9	(D)	(D)	(D)	(D)	-	-	33413 98
(X)	(X)	(NA)	(X)	(X)	1.1	(X)	(X)	(X)	(X)	(X)	(X)	33413 00
(X)	(X)	(NA)	(X)	(X)	204.3	(X)	(X)	(X)	(X)	(X)	(X)	33414 —
												33414 10
-	-	3	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	-	2	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33414 14
-	-	2	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33414 17
												33414 20
-	-	3	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	-	4	(NA)	2.9	2.8	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33414 23
-	(D)	4	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33414 26
-	-	8	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33414 05
(D)	9.2	20	150.4	144.9	117.6	(D)	(D)	(D)	(D)	(NA)	(NA)	33414 11
(X)	(X)	(NA)	(X)	(X)	(NA)	(X)	(X)	(X)	(X)	(X)	(X)	33414 00
												33415 —
(X)	(X)	(NA)	(X)	(X)	1 156.6	(X)	(X)	(X)	(X)	(X)	(X)	
												33415 11
(D)	(D)	(NA)	(NA)	(8)	(8)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
(D)	(D)	29	(NA)	21 457.4	209.4	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33415 31
-	(D)	11	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33415 51
												33415 71
-	(D)	5	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	(D)	(NA)	(NA)	**2 043.2	*778.0	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33415 81
												33415 89
-	(D)	7	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
												33415 00
(X)	(X)	(NA)	(NA)	(X)	14.1	(X)	(X)	(X)	(X)	(X)	(X)	
(X)	(X)	(NA)	(X)	(X)	166.4	(X)	(X)	(X)	(X)	(X)	(X)	33416 —
												33416 21
-	-	3	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	(D)	7	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33416 31
-	(D)	9	(NA)	53.7	35.0	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33416 43
												33416 61
-	-	2	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
-	-	1	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33416 69
-	-	11	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33416 71
												33416 99
-	-	13	(NA)	(D)	(D)	(NA)	(NA)	(NA)	-	(NA)	(NA)	
(X)	(X)	-	(NA)	(X)	-	(X)	(X)	(X)	(X)	(X)	(X)	33416 00

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers:

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987							
				Product shipments[1]					
				Total, including interplant transfers		Commercial		Interplant transfers	
		Number of companies with shipments of $100,000 or more	Quantity of total production	Quantity[2]	Value (million dollars)	Quantity	Value (million dollars)	Quantity	Value (million dollars)
3341- --	**SECONDARY NONFERROUS METALS**—Con.								
33417 —	Aluminum ingot, produced by secondary smelters (see also codes 33347 and 33553):								
33417 00	Ingot, excluding extrusion billet ..... 1,000 s tons..	49	1 628.1	1 471.8	1 459.3	(D)	(D)	(D)	(D)
33418 —	Aluminum extrusion billet, produced by secondary smelters (see also codes 33348 and 33554):								
33418 00	Extrusion ingot (billet) ..... 1,000 s tons..	10	224.9	170.6	171.3	(D)	(D)	(D)	(D)
33410 —	Secondary nonferrous metals, n.s.k.	(NA)	(X)	(X)	501.7	(X)	(X)	(X)	(X)
33410 00	Secondary nonferrous metals, n.s.k., typically for establishments with more than 10 employees (see note)	(NA)	(X)	(X)	344.6	(X)	(X)	(X)	(X)
33410 02	Secondary nonferrous metals, n.s.k., typically for establishemnts with less than 10 employees (see note)	(NA)	(X)	(X)	157.1	(X)	(X)	(X)	(X)

Note: In 1987 Census of Manufactures, data for establishments of small single unit companies with up to 20 employees were estimated from administrative-records data rather than data actually collected from respondents. Employment cutoffs used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1987 and 1982 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

[1]Data reported by all producers, not just those with shipments of $100,000 or more.

[2]For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

[3]For 1987, SIC Industry 3339 is revised. In 1982, data for this industry were published as 3332, 3333, and 3339.

[4]For 1982, data for this product code were published as product code 33399 85.

[5]For 1982, product codes 33415 11 and 33415 81 were combined to avoid disclosing data for individual companies.

1987 and 1982—Con.

of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of

1987—Con.		1982										
				Product shipments[1]								
				Total, including interplant transfers		Commercial		Interplant transfers				
Quantity of shipments of products made from materials owned by others	Quantity produced and consumed in the same plant in the manufacture of other products	Number of companies with shipments of $100,000 or more	Quantity of total production	Quantity[2]	Value (million dollars)	Quantity	Value (million dollars)	Quantity	Value (million dollars)	Quantity of shipments of products made from materials owned by others	Quantity produced and consumed in the same plant in the manufacture of other products	1987 product code
												3341- —
												33417 —
20.6	208.4	61	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33417 00
												33418 —
(D)	(D)	9	(NA)	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	33418 00
(X)	(X)	(NA)	(X)	(X)	145.8	(X)	(X)	(X)	(X)	(X)	(X)	33410 — 33410 00
(X)	(X)	(NA)	(X)	(X)	83.0	(X)	(X)	(X)	(X)	(X)	(X)	33410 02
(X)	(X)	(NA)	(X)	(X)	62.8	(X)	(X)	(X)	(X)	(X)	(X)	

Table 3. **Materials Consumed by Kind: 1987 and 1982**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material		1987 Quantity[1]	1987 Delivered cost (million dollars)	1982 Quantity[1]	1982 Delivered cost (million dollars)
	INDUSTRY 3331, PRIMARY COPPER					
	Materials, parts, containers, and supplies		**(X)**	**2 065.3**	**(X)**	**2 438.2**
	Copper:					
102100	Ores, concentrates, and precipitates	1,000 s tons	**5 246.8	1 308.7	3 590.0	1 010.4
333120	Refined unalloyed copper (cathodes, ingots, cakes, slabs, etc.) and blister or anode copper	do	(S)	648.7	935.4	[3]1 153.0
190024	Copper and copper-base alloy scrap	do	(D)	(*)	(D)	(*)
970099	All other materials and components, parts, containers, and supplies		(X)	[4]107.4	(X)	[4]273.9
971000	Materials, parts, containers, and supplies, n.s.k.[2]		(X)	.5	(X)	.9
	INDUSTRY 3334, PRIMARY ALUMINUM					
	Materials, parts, containers, and supplies		**(X)**	**1 698.7**	**(X)**	**2 390.2**
281951	Alumina	1,000 s tons	5 532.9	767.4	6 213.5	1 404.7
	Aluminum and aluminum base alloy scrap (excluding home scrap):					
190021	From other establishments of the same company	1,000 s tons	(D)	(*)	20.1	28.7
190022	From all other sources	do				
333974	Magnesium ingot	do	(S)	37.5	6.7	17.5
970099	All other materials and components, parts, containers, and supplies		(X)	[4]834.1	(X)	939.3
971000	Materials, parts, containers, and supplies, n.s.k.[2]		(X)	59.7	(X)	-
	INDUSTRY 3339, PRIMARY NONFERROUS METALS, N.E.C.					
	(Material data were not collected for this industry.)					
	INDUSTRY 3341, SECONDARY NONFERROUS METALS					
	Materials, parts, containers, and supplies		**(X)**	**3 151.6**	**(X)**	**3 588.4**
333471	Aluminum ingot	1,000 s tons	65.6	86.2	90.0	80.2
	Aluminum and aluminum-base alloy scrap, excluding home scrap:					
190021	From other establishments of the same company	1,000 s tons	(S)	329.9	470.5	331.3
190022	From all other sources	do	*801.1	723.4	822.6	508.9
333121	Refined unalloyed copper (cathodes, ingots, cakes, slabs, etc.)	do	429.9	325.6	710.5	575.6
190024	Copper and copper-base alloy scrap	do				
	Lead:					
333986	Refined unalloyed lead	1,000 s tons	51.5	15.9	**901.0	320.6
190025	Lead and lead-base alloy scrap (including antimonial lead scrap)	do	(S)	171.0		
	Zinc:					
333341	Refined unalloyed zinc	1,000 s tons	**110.4	84.1	99.5	68.7
190026	Zinc and zinc-base alloy scrap (including drosses and skimmings)	do	(S)	55.1	149.3	73.5
	Tin:					
333976	Refined unalloyed tin	1,000 s tons	4.9	25.6	5.3	62.5
190027	Tinplate scrap (including shredded steel can scrap)	do	(D)	(*)	*282.5	26.5
333974	Magnesium ingot	do	**1.5	2.3	3.0	5.5
970099	All other materials and components, parts, containers, and supplies (including scrap gold, silver, and platinum)		(X)	[4]737.0	(X)	1 335.3
971000	Materials, parts, containers, and supplies, n.s.k.[2]		(X)	595.5	(X)	197.7

[1]For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

[2]Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

[3]For 1982, material code 333120 was published as material codes 333121 and 333111.

[4]Data are combined with material code 970099 to avoid disclosing data for individual companies.

APPENDIX
Scope and Coverage and Explanation of Terms

GENERAL

The 1987 Census of Manufactures is the 32nd census of manufacturing establishments conducted in the United States. For 1987, it was conducted as part of the economic censuses, which included the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses, under authority of title 13 of the United States Code. Title 13 specifies that an economic census be conducted every 5 years to cover years ending in 2 and 7.

SCOPE AND COVERAGE

Establishment Basis of Reporting

The census of manufactures is conducted on an establishment basis. All manufacturing establishments with one paid employee or more at any time during the year are covered by the census of manufactures. Therefore, a company operating at more than one location is required to file a separate report for each location. This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units which service manufacturing establishments of the same company. Where these auxiliary operations are conducted at the same location as the manufacturing operation, they are usually included in the report for the operating manufacturing establishment.

Use of Administrative Records

From a universe of approximately 350,000 manufacturing establishments in the 1987 Census of Manufactures, approximately 150,000 small single-establishment companies were excused from filing reports. Selection of the small establishment nonmail cases was done on an industry-by-industry basis. A variable cutoff was used to determine those establishments for which administrative records were to be used in place of a census report. The cutoffs were selected so the administrative-record cases would account for approximately 3 percent or less of the value of shipments for the industry. These cutoffs were then adjusted so that all single-establishment companies with less than 5 employees were excluded from the mail canvass, while all establishments with more than 20 employees were included. Where establishments in the 5 to 20 employee size range were included in the mail canvass, an abbreviated census form was frequently used.

For these nonmail establishments, (and a small number of larger establishment whose reports were not received at the time the data were tabulated) data on employment, payroll, and receipts were obtained from administrative records of other government agencies rather than from census forms. The administrative-record information was then used in conjunction with industry averages to estimate the data for these establishments. The value of shipments and cost of materials were not distributed among specific products and materials but were included in the product and material "not specified by kind" (n.s.k.) categories.

EXPLANATION OF TERMS

Number of establishments and companies–A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

All employees–Includes all full-time and part-time employees on the payrolls at any time during the year. Included are all persons on paid sick leave, paid holidays, and paid vacations. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average of those for midmonth payroll periods of March, May, August, and November.

Production workers–Includes workers up through the working-supervisor level engaged in fabricating, processing, assembling, inspecting, receiving, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial, guard services, product development, auxiliary production for plant's own use (e.g., powerplant), recordkeeping, and other closely associated services. Truckdrivers delivering ready-mixed concrete are also included in production workers.

Other employees–Includes nonproduction personnel, including those engaged in the following activities: supervision above working-supervisor level, sales (including driver/salespersons), sales delivery (truckdrivers and helpers), advertising, credit collection, installation and

servicing of own product, clerical and routine office functions, executive, purchasing, finance, legal, personnel (including cafeteria, etc.), professional, and technical employees.

Payroll–Includes the gross earnings for the "employees" defined above, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. Respondents were told that in reporting they could follow the definition of payrolls used for calculating the Federal withholding tax.

Production-worker hours–Covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave when the employee was not at the plant.

Cost of materials–Refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuels consumed, regardless of whether they were purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (a) all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year; (b) electric energy purchased; (c) fuels consumed for heat, power, or generating electricity; (d) work done by others on materials or parts furnished by manufacturing establishments (contract work); and (e) products bought and resold in the same condition.

Specific materials consumed (table 3)–In addition to the total cost of materials which every establishment was required to report, information was also collected for most manufacturing industries on the consumption of major materials used in manufacturing. These inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. Establishments consuming less than a specified amount (usually $10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which administrative records were used was estimated as "not specified by kind" (n.s.k.).

Value of shipments and other receipts–Generally refers to received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts such as receipts for contract work performed for others, installation and repair receipts, sale of scrap, and sale of products bought and resold without further processing. Included are all items made by or for the establishment from materials owned by it whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In a few industries, the value of production or value of work completed is used instead of value of shipments. These industries are identified in the introduction and are footnoted in table 1.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, that is, including not only the direct costs of production but also a reasonable proportion of "all other costs" (including company overhead and profit).

Shipments or production of individual products (table 2)–In the 1987 census, detailed shipment information was collected for approximately 11,000 individual products. These products are identified by a seven-digit code and are grouped into approximately 1,500 classes of products, which in turn are primary to 459 four-digit industries. Data at the five-digit product-class level have been collected each year as part of the annual survey of manufactures. Information at the seven-digit level, collected for many industries in the current industrial reports program, is not included in this table.

Value added by manufacture–This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments for products manufactured plus receipts for services rendered. The result of this calculation is then adjusted by the addition of value added by merchandising operations (that is, the difference between the sales value and cost of merchandise sold without further manufacturing, processing, or assembly) plus the net change in finished goods and work-in-process inventories between the beginning and end of the year.

For those industries where value of production is collected instead of value of shipments (see footnote in table 1), value added is adjusted only for the change in work-in-process inventories between the beginning and end of the year. For those industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

Value added avoids the duplication in the figure for value of shipments which results from the use of products of some establishments as materials by others. Value

added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

Expenditures for new plant and equipment–Establishments in operation and any known plants under construction were asked to report their expenditures for (a) permanent additions and major alterations to manufacturing establishments and (b) new machinery and equipment used for replacement and additions to plant capacity if they are of the type for which depreciation accounts are ordinarily maintained.

These totals exclude expenditures for used plant and equipment, expenditures for land, and cost of maintenance and repairs charged as current operating expenses. Data for used plant and equipment will be published in the final industry bulletin.

End-of-year inventories–Comprised of (a) finished products; (b) work-in-process; and (c) materials, supplies, fuels, etc. Beginning in 1982, respondents were asked to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior years in which respondents were permitted to value their inventories using any generally accepted accounting method. Therefore, 1982 through 1987 data for inventories are not strictly comparable to prior-year data.

Specialization and coverage ratios–An establishment is classified in a particular industry if its shipments of primary products of the industry exceed in value its shipments of the products of any other single industry. An establishments' shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). The following ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in table 1 and data on product shipments shown in table 2.

Specialization ratio–Represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio–Represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments, wherever classified.

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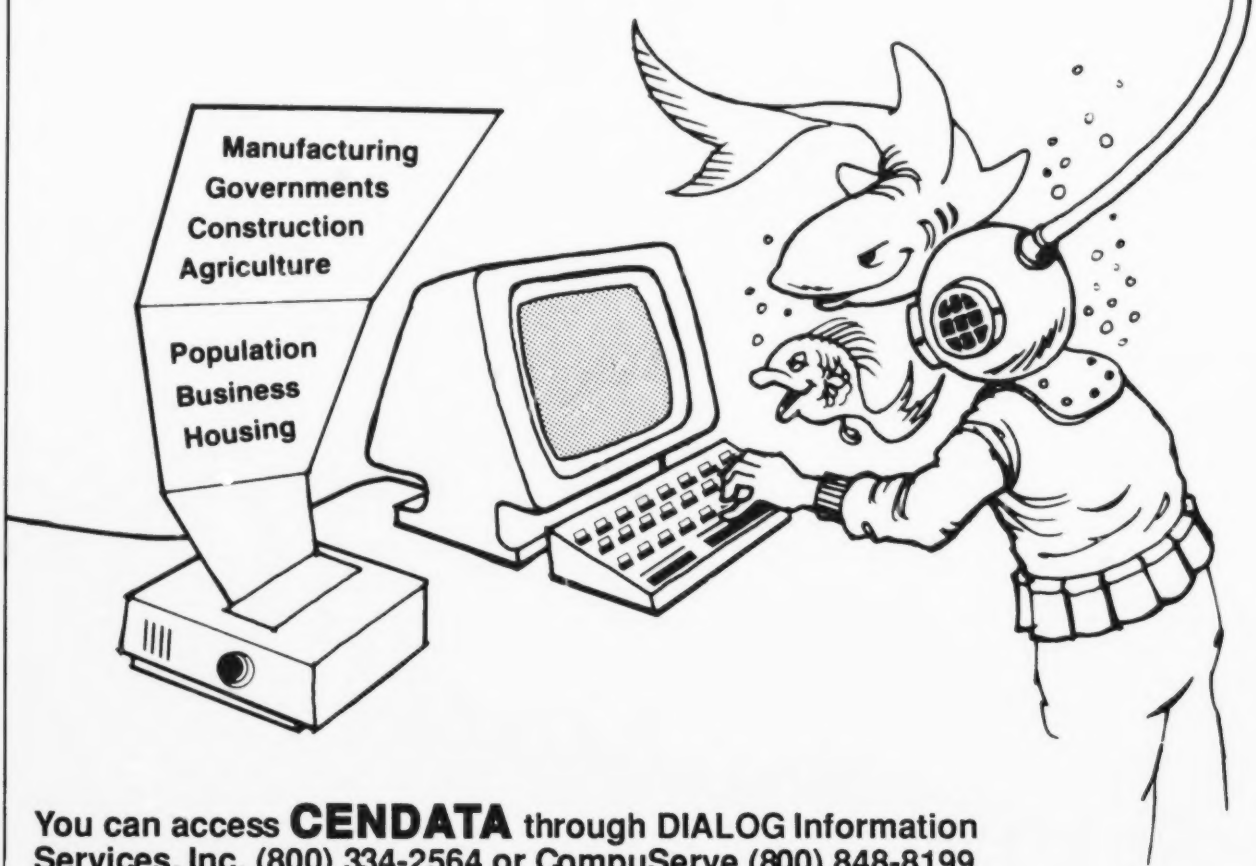

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